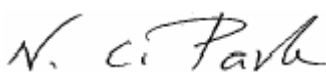
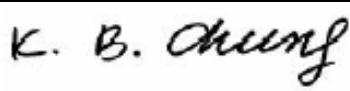


EMI Test Report

According to FCC Part 15 Subpart B

Project No.	LBE042267
Equipment under Test	
Applicant	Samsung Electronics Co. Ltd 416 Maetan-3 Dong, Yeoung tong-Ku, Suwon City, Gyeonggi-Do, Korea, 443-742
FCC ID	A3LNP-P40
Product Name	Notebook PC
Model Name	NP-P40, T2300
Manufacturer	ASUS
Date of Test	December 01, 2004
Issued Date	December 13, 2004

	Name/Position	Signature
Tested by	Min Gon, Kim Test Engineer	
Reviewed by	No Cheon, Park Manager of EMC Lab.	
Authorized by	Kyu Baek, Chung Chief of EMC Lab.	

1. This test reports does not constitute an endorsement by NIST/NVLAP or U.S Government.
2. This test report is to certify that the tested device properly complies with the requirements of FCC Rules and Regulations Part 15 Subpart B Unintentional Radiators.

All tests necessary to show compliance to the requirements were and these results met the specifications requirement.

This laboratory is registered by the NIST/NVLAP, U.S.A.

The test reported herein have been performed in accordance with its terms of registration.



NVLAP LAB CODE 200623-0

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- 1.1 Basic Information related Product
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- 1.7 Test Configuration
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- 3.2 Radiated Emission

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1. General Information

1.1 Basic Information related Product

Applicant	Samsung Electronics Co. Ltd
Model name	NP-P40
Applicant Address	416 Maetan3- Dong, Yeoung tong-Ku, Suwon City, Gyeonggi-Do, Korea, 443-742
Contact Person	Min Gon, Kim
Kind of product	Notebook PC
Variant list	NP-P40 E, T2300
Manufacturer	ASUS
New / Alternative / Permissive change Information	New (Platy platform)

1.2 Detail Information related Product

Specification

Item	Specification	Remark
CPU	Intel Pentium-M DOTHAN 2.13GHz Cache 2MB, FSB 533MHz	-
Chipset	Intel Alviso 915PM, 400MHz/533MHz FSB	-
Main Memory	Infineon, PC4200, HYS64T128021HDL, 1Gbyte X2 (2Gbyte)	-
Graphic controller	ATI Mobility Radeon X600, 216XDDAGA23FH, 128 on die memory	-
LCD DISPLAY	Samsung LTN-150PG-L03, 15.0", SXGA+, 1400x1050	-
HDD	Hitachi, HTS548080M9AT00, 80GB, 5400RPM	-
MODEM	Ambit, T60M283.00, S/W Modem, 56KBPS, Fax/Data MDC	-
LAN	BROADCOM, BCM5788MKFB	-
Wireless LAN	Intel, WM3B2200BG, 802.11b/g, 54MBPS, Mini PCI	FCC ID:PD9WM3B2 200BG
ADAPTER	Acbel, API3AD05, AD-9019N, 90W, 3pin	-
Internal ODD	Teac Super multi DV-W24E	-

Ports	VGA / SIO /PIO/6pin 1394/4 port USB 2.0 / MIC / Line-out / IRDA /PCMCIA/3in1 slot/S-VHS / RJ11 / RJ45	-
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Operating Frequency

2.13MHz(CPU Speed), 533MHz(Host Clock), 400MHz/533MHz(DDR2),
33MHz(PCI Clock), 133MHz (PCIE Clock), 14.318MHz(Ref), 12.2MHz(Audio Clock),
54MHz(LCD Clock)

1.3 Operating Mode and Condition

The EUT exercise program used during radiated and conducted emissions testing was the Samsung Standardized Emission Test Program for Windows. During the certification test, the LCD panel was open and video signals were simultaneously active on the LCD panel, and the VGA port.

The system was configured for testing in a typical fashion that a customer would normally use, and was tested while in an automated non-attendant mode.

The program repetitively sends a screen of 'H' to the display, reads and writes to the hard drive, and writes to all serial , parallel ports and modem.

Music is played from the CD player to the Line-In jack and ported out to the earphones.

A hard drive from the remote PC was mapped to the EUT and a data file was read and written over the network connection to provide continuous activity. The EUT was connected to a remote PC through the Ethernet port with UnShielded Twisted Pair Ethernet cable and Modem port by using hyperterminal program. Ethernet testing was performed at 100 Mbps operation.

Cable were attached to each of the available I/O Ports. Where applicable, peripherals were attached to the I/O cables.

1.4 Test System Details

This section provide details of the equipment under test(EUT)and the peripheral assemblies attached during radiated and conducted emission testing.

15.0", SXGA+ resolution LCD was set to its maximum value of 1400x1050 pixels.

and externally attached VGA monitor was set same resolution of 1400x1050 in simultaneous display mode

1.5 Equipment Modifications

No equipment modifications were required.

1.6 Test Procedure

1.6.1 Conducted Emission

EUT was placed on a platform nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting ground plane.

The rear of EUT, including peripherals was aligned and flush with rear of tabletop.

All other surfaces of tabletop was at least 80cm from any other grounded conducting surface. I/O cables and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bindle 30cm to 40cm long and were hanged at a 40cm height to the ground plane.

Each EUT current-carrying power lead, except the ground(safety)lead, were individually connected through a LISN to the input power source.

All unused 50 ohm connectors of the LISN were resistively terminated in 50 ohm when not connected to the measuring equipment.

1.6.2 Radiated Emission

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.

The rear of EUT, including peripherals was aligned and flush with rear of tabletop.

I/O cables that were connected to the peripherals were bundle in center.

They were folded back and forth forming a bundle 30cm to 40cm long and were hanged 40cm height to the ground plane.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane and the run table azimuth was varied to obtain the maximum signal strength. The system configuration, clock speed, mode of operation or video resolution, turntable azimuth with respect to the antenna were noted for each frequency found.

The spectrum was scanned from 30 to 1000 MHz using biconiLog antenna.

Also, the EMI test receiver was scanned from 1000 to 11000 MHz using linearly polarized double ridge horn antennas were used.

The explanation of measuring instrument setup when respective function is used in any frequency band is as following;

Frequency Band	Instrument	Detector Function	Resolution BW	Video BW
30 to 1000 MHz	Spectrum Analyzer	Peak	1MHz	1MHz
	EMI Test Receiver	Quasi-Peak	120kHz	-
Above 1000 MHz	EMI Test Receiver	Peak	1MHz	-

1.7 Test Configuration

Used EUT and Peripherals

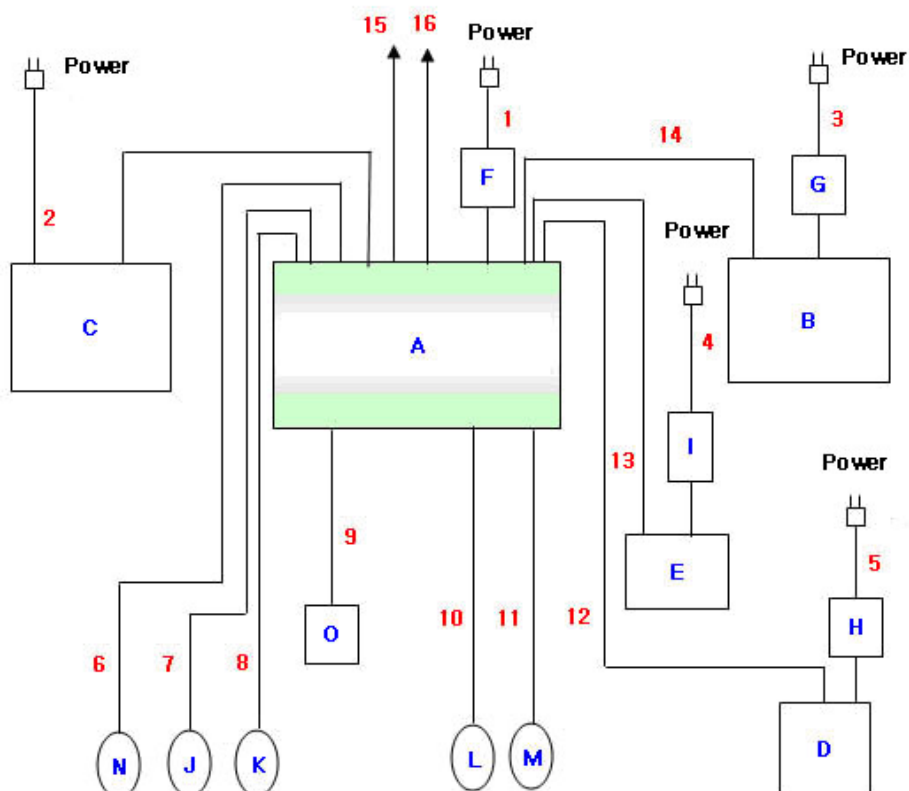
Seq	Device	Model Name	Serial #	Maker	Note
A	Note PC	NP-P40	-	ASUS	FCC ID : A3LNP-P40
B	LCD Monitor	A124PO	365-1414-01	Sun Microsystem	DoC
C	Printer	DESTJET932C	MY02Q1F0JN	HP	DoC
D	CCTV	CCM-054TE	54112098581	Commax	-
E	External HDD	Handy-Q	HV08J1AT600351	Samsung	-
F	AC Adapter	AD-9019N	CNBA4400190ABJ6 F4B90023	AcBel	For Note PC
G	AC Adapter	PSCV121101A	030800193 Rev	Samsung	For Monitor
H	AC Adapter	YK-17130K	-	Commax	For TV
I	AC Adapter	PSCV360104A	C020381945B	Samsung	For External HDD
J	USB Mouse	M-UR69	LNA20715252	Logitech	DoC
K	USB Mouse	M-UR69	HCA40801485	Logitech	DoC
L	Serial Mouse	C3KMS1	1022953	Microsoft	FCC ID : C3KMS1
M	USB Mouse	M-UR69	LNA24917787	Logitech	DoC
N	USB Mouse	M-UR69	HCA40801479	Logitech	DoC
O	Headset	Stereo LS1	-	Microsoft	-

Used Cable Description

No	Connect Cable	Length [m]	Shielded [Y/N]	Remark
1	Power	1.7	No	For Note PC
2	Power	1.7	No	For Printer
3	Power	1.5	No	For Monitor
4	Power	1.7	No	For External HDD
5	Power	1.7	No	For TV
6	USB	1.5	Yes	-

7	USB	1.5	Yes	-
8	USB	1.5	Yes	-
9	Audio In/Out	1.2	No	-
10	Serial	1.5	Yes	-
11	USB	1.5	Yes	-
12	S-VHS	1.3	Yes	-
13	1394	1.3	Yes	-
14	Monitor	1.5	Yes	-
15	LAN (RJ45)	3.0	No	-
16	TEL (RJ11)	3.0	No	-

Block Diagram



1.8 Applied Standards

List

Product or Generic Standards	Basic Standards
FCC Part15 SubPart B	ANSI C63.4 : 2003

1.9 Test Facility

General Information

All test described in this report were performed by :

SAMSUNG ELECTRONICS CO., LTD.

EMC TESTING LABORATORY

416 Maetan 3-Dong, Yeungtong-Gu, Suwon City, Gyunggi-Do, Korea, 443-742

Semi Anechoic Chamber #1(Registration Number : 873282) and Shielded Room.

This test facility has been filed in FCC under the criteria in ANSI C63.4.

Accreditation and Listing



Uncertainty

(According to NAMAS Pub.NIS81)

Samsung IT EMC Test Lab.

Conducted Emission : $\pm 1.9\text{dB}$

Radiated Emission Bi-Log Antenna : $\pm 5.1\text{dB}$

2. Summary of Test Results

Result : PASS

The equipment under test(EUT) has been found to comply with the applied standards.

Section of the Product Standard		Applied Standard	Result
Electromagnetic Emission Test			
3.1	Conducted Emission	FCC Part15 SubPart B	Complied
3.2	Radiated Emission	FCC Part15 SubPart B	Complied

3. Description of Individual Tests

3.1 Conducted Emission

Test Information	
Test Engineer	Min Gon, Kim
Test Date	December 01, 2004
Climate Condition	Ambient Temperature : 25 °C Relative Humidity : 52%
	Atmospheric Pressure : 1013mbar
Test Place	Shield Room

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
EMI TEST RECEIVER	ESCS30	R&S	830986/004	2005-02-12	12
LISN	ESH3-Z5	R&S	100263	2005-05-25	12
LISN	3810/2NM	EMCO	2251	2005-02-07	12
Double 2-Wire ISN	ENY22	R&S	836727/016	2005-02-23	12

Measurement Results	Passed The Measured emissions of the EUT have found to be below the specified limits.
----------------------------	---

Test Data & Graph

The Initial step in collecting conducted data was to perform a peak and average scan over the measurement range using a receiver

The find data represents worst-case emissions.

* QP : Quasi-peak, AV: Average

* Measurement detector function and bandwidth

- Detector function : CISPR quasi-peak, Average

- Bandwidth : 9kHz

* Result = Meter Reading(QP or AV) + Total Loss(LISN Insertion loss + Cable loss)

* Margin = Limit – Result

1. TEST DATA & GRAPH

1. 1 Quasi Peak Table

MEASUREMENT RESULT: "P40_Platy_01_fin QP"

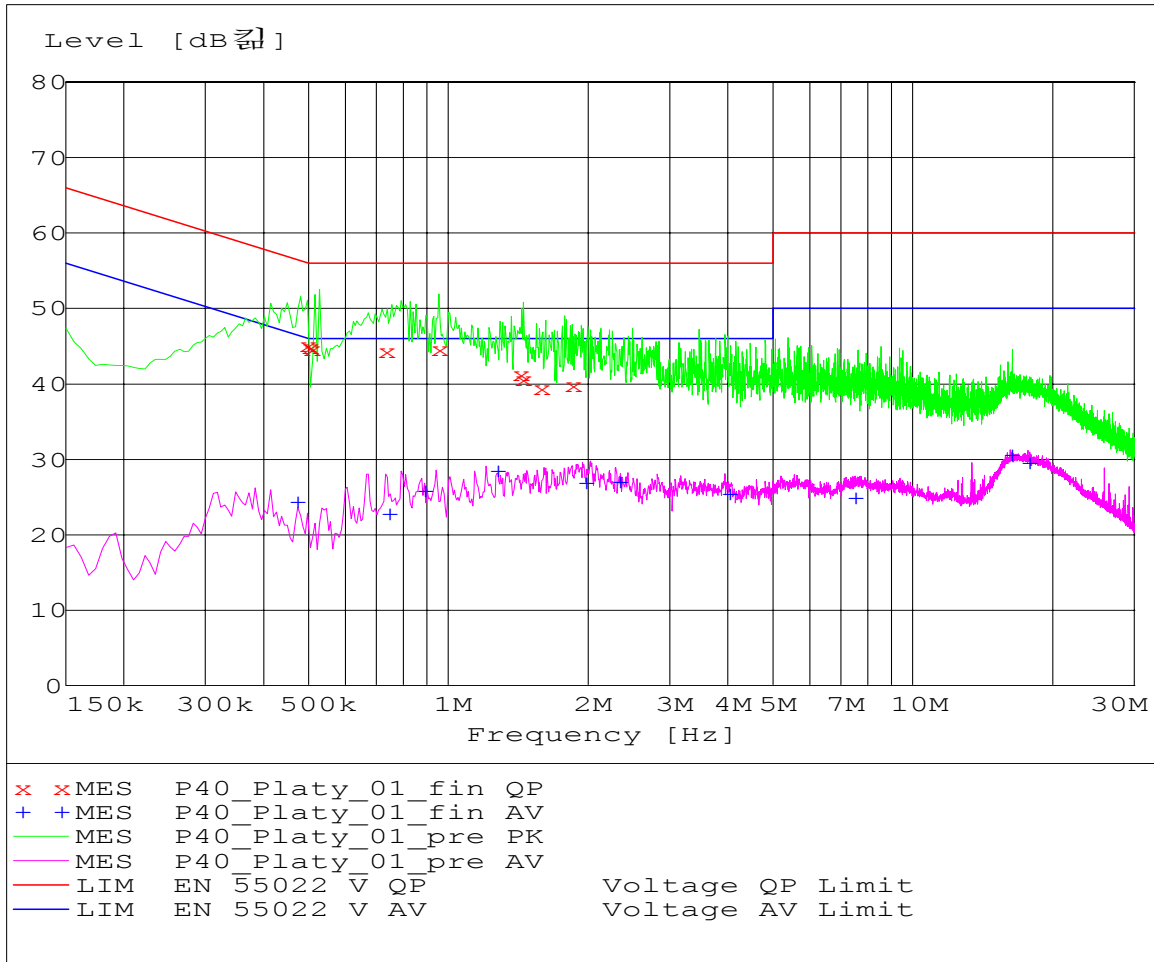
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.495000	45.10	0.6	56	11.0	L1	GND
0.500000	44.90	0.6	56	11.1	L1	GND
0.505000	44.60	0.6	56	11.4	L1	GND
0.730000	44.30	0.5	56	11.7	N	GND
0.950000	44.60	0.5	56	11.4	N	GND
1.420000	41.30	0.6	56	14.7	N	GND
1.440000	40.70	0.6	56	15.3	N	GND
1.575000	39.50	0.6	56	16.5	N	GND
1.840000	39.90	0.6	56	16.1	L1	GND

1. 2 Average Table

MEASUREMENT RESULT: "P40_Platy_01_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.470000	24.30	0.6	47	22.2	L1	GND
0.740000	22.80	0.5	46	23.2	N	GND
0.885000	25.80	0.5	46	20.2	L1	GND
1.270000	28.40	0.6	46	17.6	N	GND
1.965000	26.80	0.6	46	19.2	L1	GND
2.330000	27.00	0.5	46	19.0	N	GND
4.010000	25.40	0.8	46	20.6	L1	GND
7.480000	24.80	1.0	50	25.2	N	GND
16.230000	30.60	1.6	50	19.4	L1	GND
17.695000	29.50	1.7	50	20.5	L1	GND

- Graph



3.2 Radiated Emission

Test Information	
Test Engineer	Min Gon, Kim
Test Date	December 01, 2004
Climate Condition	Ambient Temperature : 24℃ Relative Humidity : 35%
	Atmospheric Pressure : 1028mbar
Test Place	10m Semi Anechoic Chamber

Test Equipments

Equipment	Model Name	Manufacturer	Serial No.	Calibration	
				Next Date	Interval
Turn Table	DT430	HD	430/691/01	N/A	N/A
Antenna Mast	MA240	HD	240/678 BJ:01	N/A	N/A
Controller	HD100	HD	100/723	N/A	N/A
Preamplifier	CPA9232	Schaffner	1054	2005-02-12	12
BILOG Antenna	CBL6112B	Schaffner	2805	2005-02-23	12
Horn Antenna	HF906	R&S	100027	2005-08-19	24
Test Receiver	ESI26	R&S	100010	2005-03-16	12

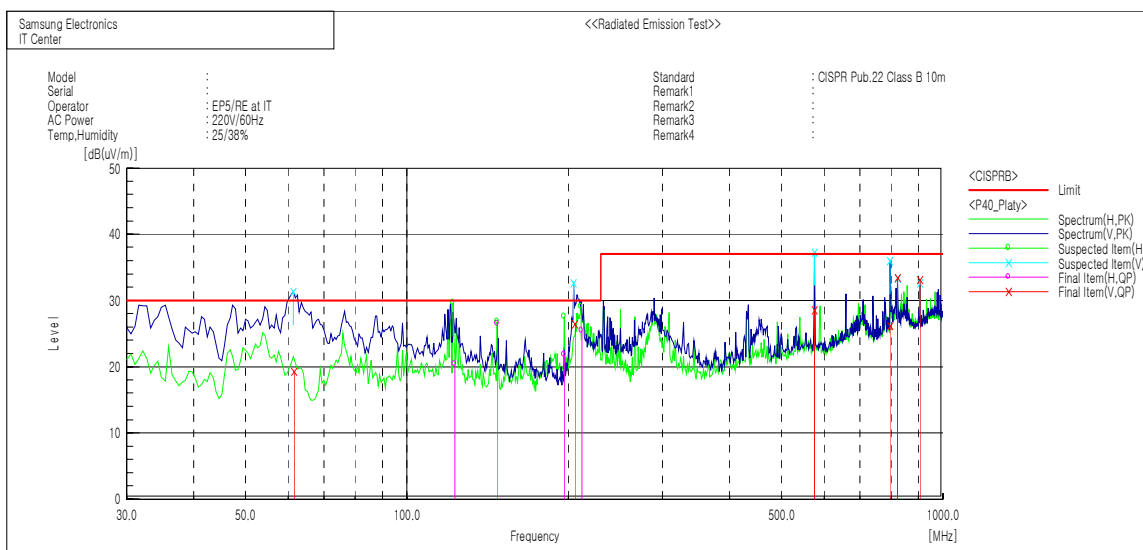
Measurement Results	Passed
	The measured emissions of the EUT have found to be below the specified limits.

Test Data & Graph

The initial step in collecting radiated data was to perform a peak scan over the measurement range using a receiver. All modes of operation were investigated and the worst-case emission are reported. The minimum margin to the limit is as follows:

All other emission are non-significant.

1. Test Data (30MHz ~ 1GHz)



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	61.597	V	34.2	-15.0	19.2	30.0	10.8	262.0	109.0	
2	122.852	H	27.2	-6.9	20.3	30.0	9.7	388.0	137.0	
3	147.439	H	34.7	-8.3	26.4	30.0	3.6	390.0	153.0	
4	196.624	H	31.9	-10.2	21.7	30.0	8.3	332.0	267.0	
5	205.881	V	36.4	-10.0	26.4	30.0	3.6	110.0	257.0	
6	212.071	H	35.1	-9.7	25.4	30.0	4.6	375.0	241.0	
7	576.290	V	26.3	2.2	28.5	37.0	8.5	381.0	35.0	
8	797.526	V	21.5	4.6	26.1	37.0	10.9	278.0	347.0	
9	823.226	V	27.9	5.5	33.4	37.0	3.6	154.0	35.0	
10	905.598	V	27.3	5.8	33.1	37.0	3.9	138.0	44.0	

* Measurement detector function and bandwidth

- Detector function : CISPR quasi-peak
- Bandwidth : 120kHz

* Receiving Antenna Mode : Horizontal, Vertical

* Test distance : 10m (Semi-Anechoic Chamber)

* Result = Meter Reading + Total Loss(Antenna factor + Cable loss - Amp. Gain)

* Margin = Limit – Result

2. Test Data (1GHz~11GHz)

Freq. [MHz]	Reading [dBuV/m]	c.f. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Azimuth [°]
1134.0	27.70	3.68	31.38	74	42.62	100.0	150.0
4932.0	17.52	16.66	34.18	74	39.82	100.0	150.0
4935.0	17.87	16.67	34.54	74	39.46	100.0	150.0
4937.0	15.20	16.68	31.88	74	42.12	100.0	150.0
6954.0	9.07	21.12	30.19	74	43.81	100.0	330.0

* Measurement detector function and bandwidth

- Detector function : peak

- Bandwidth : 1MHz

* Receiving Antenna Mode : Horizontal, Vertical

* Test distance : 3m (Semi-Anechoic Chamber)

* Result = Meter Reading + Total Loss(Antenna factor + Cable loss-Amp. Gain)

* Margin = Limit – Result

4. Appendix

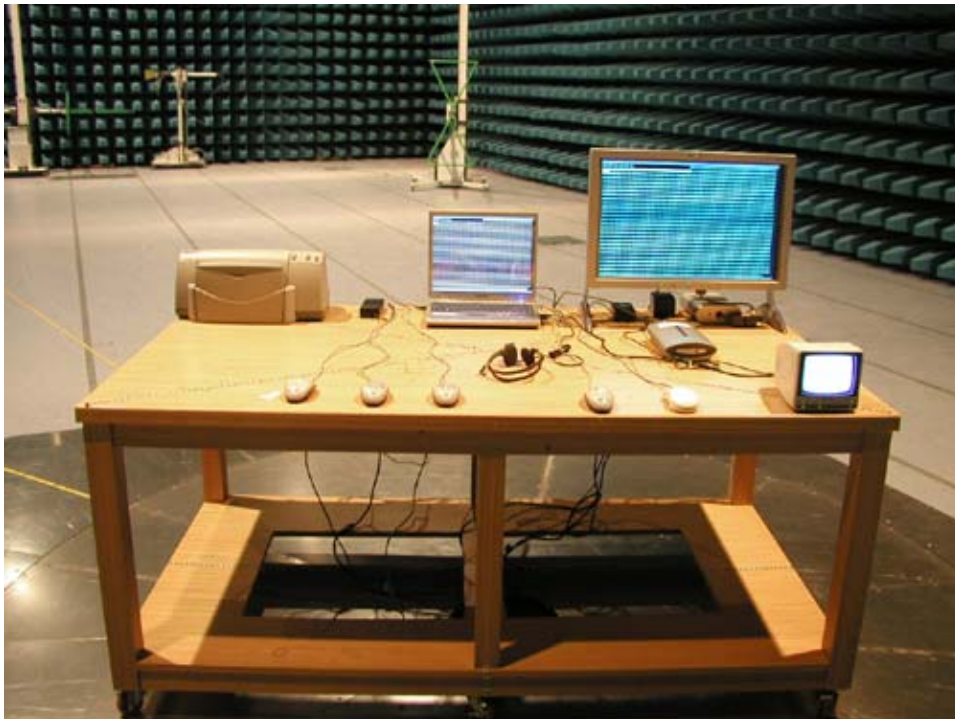
4.1 Test Photography



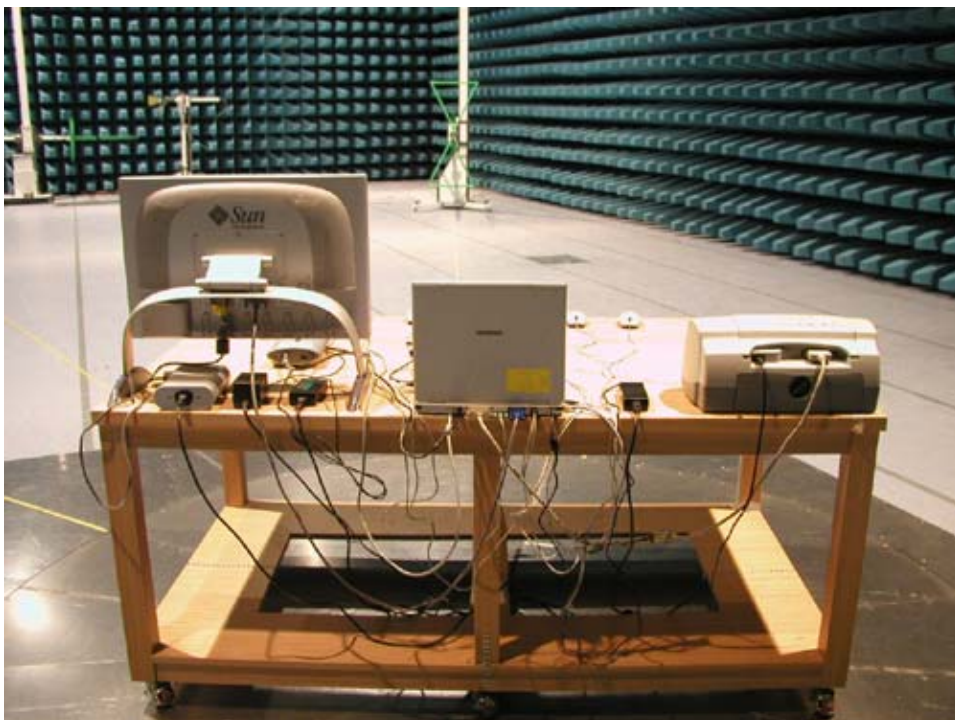
Pic. 1 Conducted Emission (Front)



Pic. 2 Conducted Emission (Rear)



Pic. 3 Radiated Emission (Front)



Pic. 4 Radiated Emission (Rear)

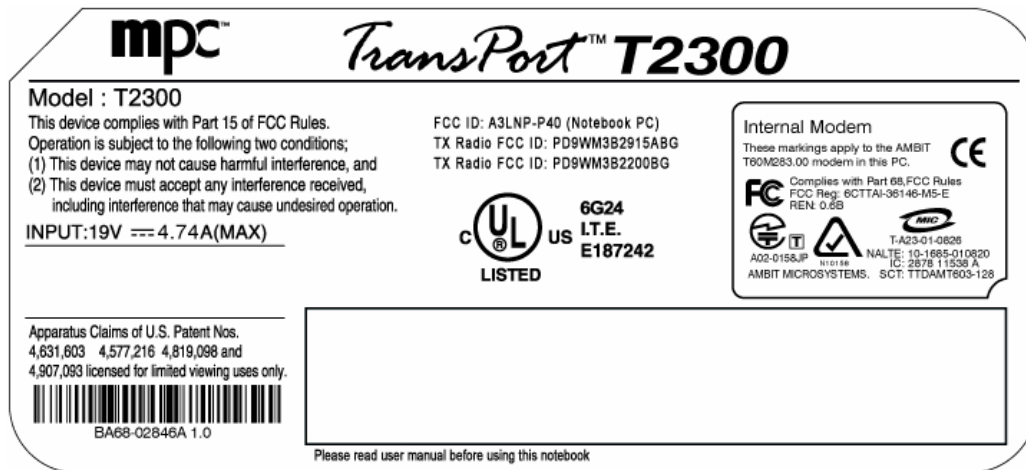
4.2 EUT Photography



Pic. 5 EUT (Front)



Pic. 6 EUT (Rear)



Pic. 7 Label



Pic. 8 Label Location